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Research Article

ROLE OF *PRATIMARSH NASYA* ON *SUKH NIDRA-PRABODHAM* (QUALITY OF SLEEP)

Parul Sharma[1]*, K.K. Sharma[2]

*[1]Assistant Professor, [2]Professor & Head, PG Dept of Panchkarma, Rishikul Campus, Uttarakhand Ayurved University, Haridwar, Uttarakhand, India.

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ABSTRACT

This research study entitled "Role of *Pratimarsh Nasya* on *Sukh Nidra-Prabodham* (quality of sleep)" evaluates the effects of *Pratimarsha Nasya* on improving overall sleep quality in individuals identified as poor sleepers based on a Pittsburgh Sleep Quality Index (PSQI) score ranging from 5 to 10. The research study, explores the effectiveness of *Pratimarsh Nasya*, a traditional Ayurvedic therapy, in improving sleep quality among healthy individuals. A total of 150 participants were enrolled and divided into two groups: the intervention group (n=75) received two drops of *Murchhit Til Tail* (processed sesame oil) intranasally each evening as *Pratimarsh Nasya*, while the control group (n=75) followed standard sleep hygiene practices, including consistent bedtime routines and environmental adjustments. The intervention spanned a period of two months, during which both groups demonstrated significant improvement in sleep quality. Comparative analysis revealed that the *Pratimarsh Nasya* group experienced more immediate and pronounced improvement in sleep quality, as indicated by higher percentage relief. However, follow-up assessments suggested that the sleep hygiene group exhibited a lower recurrence of sleep disturbances over time. These findings suggest that *Pratimarsh Nasya* may offer an effective short-term strategy for enhancing sleep quality, while sleep hygiene practices contribute to more sustained, long-term benefits. No treatment related adverse events were reported in the study. Further research is recommended for underlying mechanisms and long-term effects of *Nasya* therapy on sleep health.

INTRODUCTION

Everyone is struggling with sleep these days, either because of excessive work, or late-night parties, scrolling through social media, or just due to excessive stress. Sleep is a prime function for the rest and restoration of each organ of our body.[1] This natural and vital urge takes up nearly one-third of our lives, yet the sleep remains a mystery to us. On one hand, good quality sleep enhances concentration, emotional stability, cognitive function, motivation and brings balance to the mind, body, soul and consciousness. On the other hand, inadequate or poor-quality sleep can lead to fatigue, lack of focus, exhaustion, lower pain tolerance, anxiety, irrational thoughts, appetite loss, constipation and more.[2] Sleep also plays a crucial role in supporting digestion, metabolism, nourishment and overall health.[3]

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Sleep quality refers to the subjective experience of how well and refreshingly one sleeps, encompassing factors like ease of falling asleep, staying asleep, and feeling rested upon waking, rather than simply the amount of sleep.[4] While not as severe as clinical insomnia, poor sleep quality has become increasingly prevalent, affecting a significant portion of the population. Individuals experiencing suboptimal sleep may not meet the diagnostic criteria for insomnia, yet still endure impaired daily functioning and a decline in long-term wellness.[5]

Prevalence of poor sleep quality- According to a meta-analysis, 55-56% of people have poor sleep quality worldwide.[6] In Indian population The mean sleep score of the study was 6.78±3.19 on the PSQI, with a majority 57.2% of respondents showing 'poor' sleep quality.[7]

Sleep quality is measure by assessing these components through a scale called- PSQI (Pittsburgh Sleep Quality Index Score)[8] which determines

whether a person is good sleeper, poor sleeper or insomniac.

In Ayurved*, Sukh Nidra Prabodham* refers to - a blissful, peaceful, deep, nourishing and refreshing sleep with sleep satisfaction at wakeup that contributes to overall health, happiness and harmony in life promoting longevity and vitality.[9,10]

The causes of poor sleep quality in Ayurved are explained as indulgement in an important work, or having any disease, constitutional *Prakruti* of the person or due to *Vata*.[11] As per Acharya *Vagbhatt, Vata* and *Pitta prakopa* both along with *Manah Santap* and *Kshaya* are the culprit for loss of blissful sleep.[12]

Role of Circadian Rhythm in sleep- This biological clock of our body is situated in the hypothalamus of the brain, known as the suprachiasmatic nucleus (SCN). The SCN regulates the secretion of the hormone melatonin, which induces sleepiness. In conditions of reduced light, the SCN signals the brain to produce more melatonin. Consequently, the sleep and wake cycle synchronize with the natural rhythm of night and day.[13]

It matches with the concept of Ayurved which says the concept of *Tamah* at night to cover the *Sangya vahi srotas* so sleep occurs, the prevalence of *Tamah* at night is the reason why sleep occurs at night.[14]

To get *Sukh Nidra*, *Acharya Sushruta* told that *Pratimarsh Nasya* at evening promotes the *Sukh nidra* (sound sleep) and *Sukh Prabodham* (pleasant awakening). [15]

The present research work is a very unique work in terms of a very simple yet too effective in initiating and maintaining of good sleep and a refreshing getting up from sleep through the use of technique of *Pratimarsh nasya* which not only improves the sleep quality but works on circadian rhythm too. Additionally, the use of *Tila Taila Nasya* supports the smooth functioning of the sense organs and provides a sense of lightness in the upper body. [16]

AIMS AND OBJECTIVES

- To evaluate the effect of *Pratimarsh Nasya* in healthy individuals with poor sleep quality.
- To evaluate the effect of sleep hygiene in healthy individuals with poor sleep quality.
- To compare *Pratimarsh Nasya* with sleep hygiene in healthy individuals with poor sleep quality.

MATERIAL AND METHODS

Drug Preparation

In this research work *Taila* was taken for *Pratimarsh Nasya*. As the oil is recommended for *Nasya* in Ayurvedic texts it pacify the *Vata* and do not increase the *Kapha*.[17-19] The *Murchhit Til Tail* was chosen for the intervention in research work as among oils, the *Til Tail* is said to be best for strengthening and oleation.[20] The contents of *Murchhna* were *Manjishta, Haridra, Musta, Lodhra, Haritki, Vibhitaki, Aamlki, Hrivera, Sucipuspa, Vatankura.* The procedure of *Til Tail murchhna* was done as instructed in Bhaisajya-Ratnavali.[21]

Study Design

This was a randomized, comparative clinical trial. The study was conducted at PG department of Panchkarma, Uttarakhand Ayurved University, Rishikul Campus, Haridwar, Uttarakhand. The study protocol was approved by the institutional ethics committee and registered with Clinical Trials Registry-India (www.ctri.nic.in) (Registration number: CTRI/2022/07/044360). Informed consent was taken from the subjects before starting any study related activity. The period of study was 18 months with duration of intervention remained 2 months. The assessment was done at every 15 days, i.e., on 0, 15th, 30th, 45th and 60th day. Follow up is done after 1 month of completion of the treatment. i.e., at 90th day.

Inclusion & Exclusion Criteria

Inclusion Criteria

- Healthy individuals with age group of 20-65 years irrespective of gender, caste and religion.
- Individuals having PSQI Scale greater than or equal to 5 and less than 10.
- Healthy individuals without having any underlying diseases.
- Person willing to participate in the study and giving information consent form (ICF).

Exclusion Criteria

- Night shift workers.
- Individuals with a medical history of heart disease, respiratory disorders, seizures disorders or other chronic health conditions requiring medications were excluded.
- Known case of psychiatric disorder.
- Pregnant and lactating women.

Subjective Parameters

1. *Jrimbha*
2. *Angamard*
3. *Tandra*
4. *Shiro-Gaurav*
5. *Akshi-Gaurav*

The grading was done for all parameters from 0-3 for assessment of subjects.

Objective Criteria

Pittsburgh Sleep Quality Index (PSQI Score)

The PSQI includes a scoring from 0 to 21. A global score of 5 or more indicates poor sleep quality; the higher the score, the worse the quality. The global score more than 10 indicates serious sleep disorders. So, the participants having PSQI between 5-10 were

included for the study. There are 7 components in PSQI Scale-

1. Subjective sleep quality
2. Sleep latency
3. Sleep duration
4. Habitual sleep efficiency
5. Sleep disturbances
6. Use of sleeping medications
7. Daytime dysfunction over the last month.

Clinical Study

Selection of Subjects

The healthy individuals from college students, employees and their relatives selected randomly for this clinical study, irrespective of sex, religion, occupation etc. The individuals fulfilling the inclusion and exclusion criteria were registered on this performa and scoring of the different clinical features were done on the basis of assessment criteria. A total of 252 subjects were assessed for eligibility, from which 80 were excluded and 172 subjects met the study criteria and were randomized into two groups, each group having 86 subjects.

3 subjects from *Pratimarsh Nasya* group (Group A) withdrew before treatment exposure and 8 subjects were drop out till last. Thus, total 75 subjects were completed the research work in Group A. In the sleep hygiene group (Group B), 11 subjects lost to follow up the study research work, so total 75 subjects followed the sleep hygiene till last. Finally total 150 subjects completed the research study.

Grouping of the individuals

Group A: 75 healthy participants were educated to take *Pratimarsh Nasya* with 2 drops of *Murchhit Til Taila* at evening for 2 months.

Group B: 75 healthy participants were educated to follow sleep hygiene protocol for 2 months. The proforma was provided to them.

Sleep Hygiene

Good sleep hygiene includes a strict sleep schedule, following a bedtime routine, forming healthy habits and optimizing bedroom for sleep. The rules are as follows:

1. Taking a light exercise between 4 pm and 7 pm and never after 7 pm.
2. Going to bed when drowsy and at a proper time.
3. Switching off the (T.V.) and room light, etc.
4. Avoiding more than six caffeinated drinks (coffee, tea, cola drinks) in a day.
5. Strictly avoiding these beverages at bedtime.
6. Taking a light snack and/or milky drink before bedtime
7. Ensuring quiet ambience in the bedroom and a comfortable bed and mattress.
8. Avoiding large volumes of fluid or heavy and sugary/fatty meals near bedtime.

Method of Administration of *Pratimarsh Nasya*

- Lie down in supine position with head and neck low position.
- Instill 2 *Bindu Murchhit Tila Taila* in one nostril while other is closed (pinched), insufflate the oil up.
- Repeat the same for other nostril i.e., instill 2 *Bindu* of *Murchhit Til Tail* in other nostril, while previous one is pinched, insufflate the oil up.
- Spit the oil when it reaches the throat.

Statistical Analysis: Demographic data is presented in the form of frequency and percentage along with graphical representation. Variables on ordinal scale (gradations) were analysed using Wilcoxon Signed Rank Test. Comparison between two groups is performed using Mann Whitney U Test. P- Value less than 0.05 considered significant, P-Value less than 0.001 considered highly significant and P-Value greater than 0.05 considered not significant.

Investigations

Routine hematological investigation:

Hb, TLC, DLC, ESR

Blood sugar: Fasting and postprandial

OBSERVATION AND RESULTS

Table 1: Gender wise distribution

Gender	Group A	Group B	Total	Percentage
Male	15	31	46	30.67%
Female	60	44	104	69.33%
Total	75	75	150	100.00%

The table no 1 show that the maximum number of participants were female, among 150 subjects 104 were female, with occurrence of 69.33%. And 46 subjects were male with occurrence of 30.67%. Total 104 females were there in whole study in which 60 females were in group A, and 44 females were present in group B. Similarly, among 46 males subjects group A is having 15 males and group B is having 31 male participants.

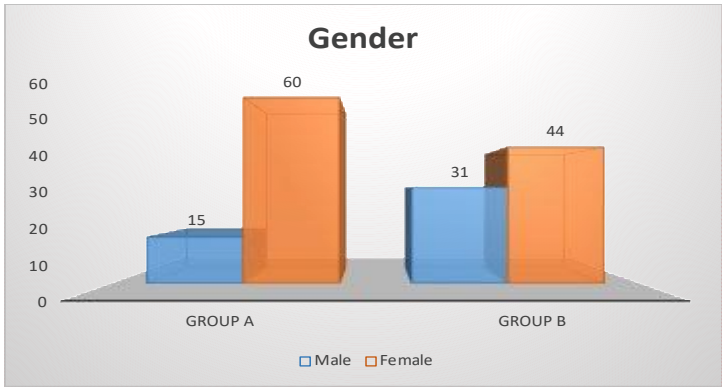


Table 2: Age Wise Distribution

Age	Group A	Group B	Total	Percentage
20-35	29	26	55	36.67%
36-50	30	32	62	41.33%
51-65	16	17	33	22.00%
Total	75	75	150	100.00%

The table no 2 shows that the maximum number of participants were belong to 36-50 years of age with occurrence of 41.33% subjects in this age criteria, followed by age of 20-35 yrs, with occurrence of 36.67%, followed by least numbers of subjects in 51-65, with 22% occurrence.

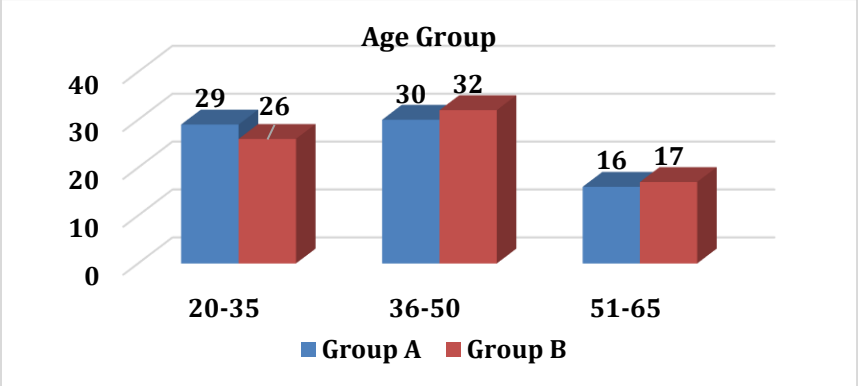


Table 3: Appetite Wise Distribution

Appetite	Group A	Group B	Total	Percentage
Good	34	32	66	44.00%
Moderate	30	30	60	40.00%
Poor	11	13	24	16.00%
Total	75	75	150	100.00%

Table-3 shows that maximum number of subjects were of good appetite with total 66 subjects comprising 44% of total participants, including 34 in group A and 32 in group B, followed by subjects who were of moderate appetite, there were 60 subjects comprising 40%, with 30 subjects in group A and 30 subjects in group B. Then there were 16% subjects belonged to poor appetite, among total 23 subjects, 11 belonged from group A & 12 from group B.

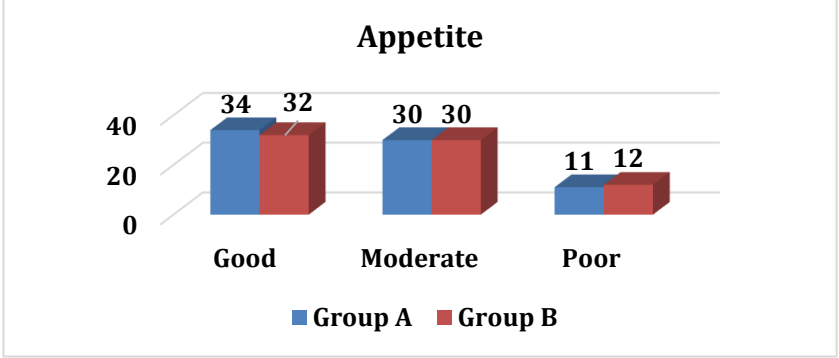


Table 4: Bowel Habit Wise Distribution

Bowel Habits	Group A	Group B	Total	Percentage
Regular	25	27	52	34.67%
Irregular	26	28	54	36.00%
Incomplete evacuation	24	20	44	29.33%
Total	75	75	150	100%

Table number 4 shows that maximum number of subjects were of irregular bowel habit with total 54 subjects comprising 36% of total participants, including 26 in group A and 28 in group B, followed by subjects who were of regular bowel habit, there were 52 subjects comprising 34.67%, with 25 subjects in group A and 27 subjects in group B. Then followed by subjects who were of incomplete evacuation type of bowel habit, there were 44 subjects comprising 29.33%, with 24 subjects in group A and 20 subjects in group B.

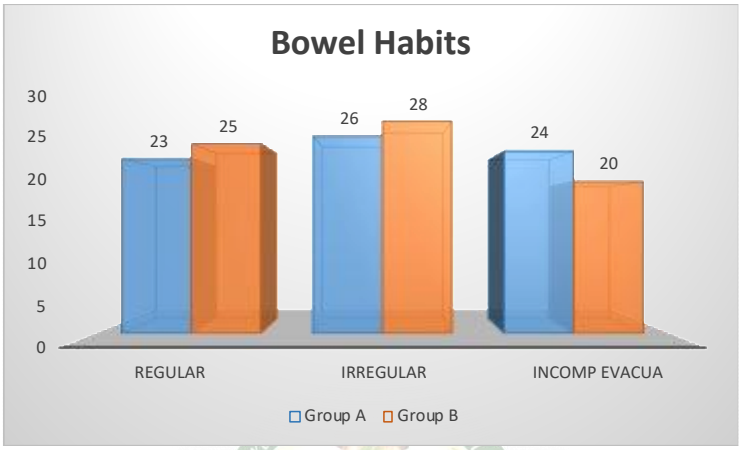


Table 5: Nature of *Agni* Wise Distribution

Agni	Group A	Group B	Total	Percentage
Sama	15	21	36	24.00%
Vishama	25	22	47	31.33%
Teekshna	23	23	46	30.67%
Manda	12	9	21	14.00%
Total	75	75	150	100.00%

Table no. 5 shows that the maximum number of participants belong to *Visham* and *Tikshn Agni* with percentage of 31.33 and 30.67% respectively, followed by *Samagni* 24%, followed by *Manda Agni* with 14% subjects. Total 47 subjects were of *Vishama Agni* including 25 subjects in group A and 22 subjects in group B. Among 46 subjects of *Tikshn Agni*, 23 belongs to group A, and 23 belongs to group B. Among 36 subjects of *Samagni* habit, 15 belongs from group A, and 21 belongs from group B. There were 21 subjects who were of *Manda Agni*, having 12 subjects in group A, and 9 in group B.

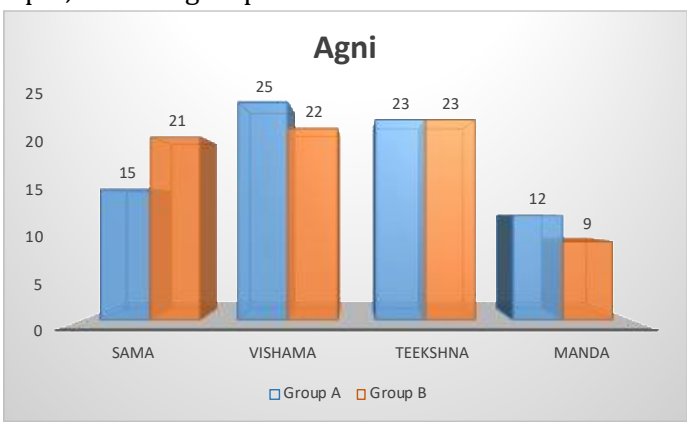


Table 6: Nature of *Kostha* Wise Distribution

Kostha	Group A	Group B	Total	Percentage
Mridu	14	15	29	19.33%
Madhyam	34	36	70	46.67%
Krura	27	24	51	34.00%
Total	75	75	150	100.00%

Table no. 6 shows that maximum number of subjects were of *Madhyam Koshtha* with total 70 subjects comprising 46.67% of total participants, including 34 in group A and 36 in group B, followed by subjects who were of *Krura Koshtha*, there were 51 subjects comprising 34%, with 27 subjects in group A and 24 subjects in group B. Then followed by subjects who were of *Mridu Koshtha*, there were 29 subjects comprising 19.33%, with 14 subjects in group A and 15 subjects in group B.

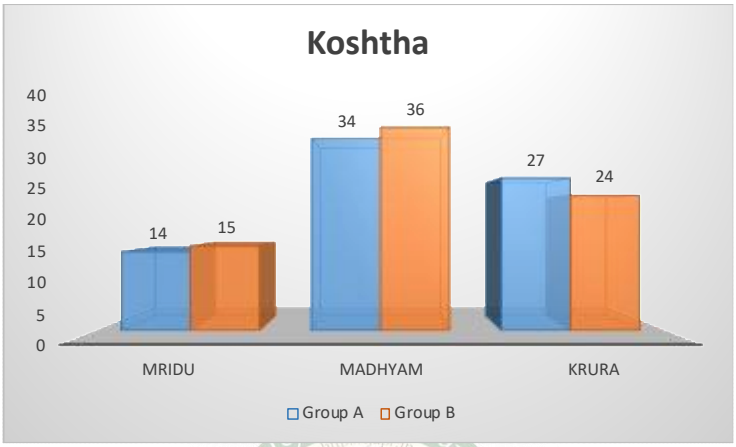
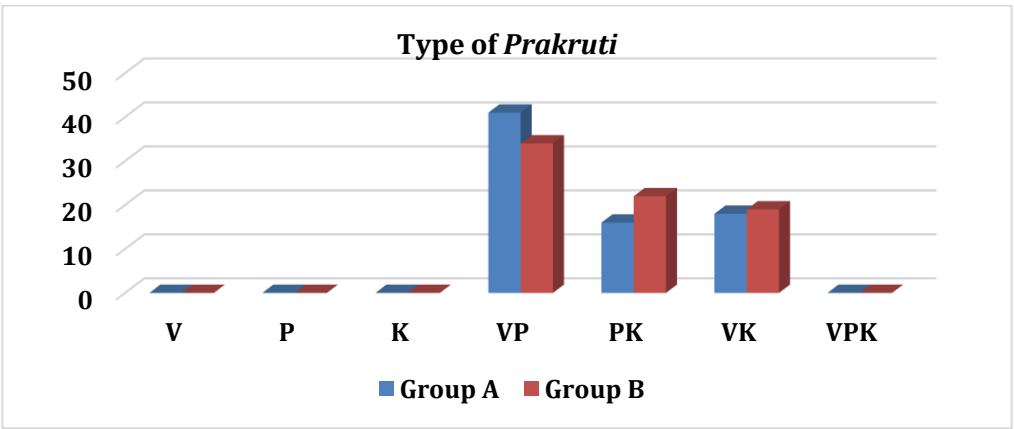


Table 7: Type of *Prakruti* Wise Distribution

Prakriti	Group A	Group B	Total	Percentage
Vata	0	0	0	0
Pitta	0	0	0	0
Kapha	0	0	0	0
VP	41	34	75	50.00%
PK	16	22	38	25.33%
VK	18	19	37	24.67%
VPK	0	0	0	0
Total	75	75	150	100.00%

Table number 7 shows the data as per *Prakruti* wise distribution. Which shows that maximum number of subjects were of *Vata-Pitta prakruti* with total 75 subjects comprising 50% of total participants, including 41 in group A and 34 in group B, the remaining subjects were belong to *Pitta-Kaphaj* and *Vata-Kaphaj Prakruti* with 25.33% and 24.67% respectively. *Pitta-Kaphaj* group is having 38 subjects comprising 25.33%, with 16 subjects in group A and 22 subjects in group B. similarly the *Vata Kaphaj* group is having 24.67% occurrence with 18 subjects in group A and 19 subject in group B. Rest pure *Vata, Pitta, Kapha* and *Sannipataj Prakruti* was not found in any group.



RESULTS

Table 8: Results of Subjective Criteria in Group A

Group A (Subjective)	Mean		Mean Diff	Median		SD		Wilcoxon W	P-Value	% Effect	Result
	BT	AT		BT	AT	BT	AT				
Jrimbha	1.95	0.56	1.39	2.00	1.00	0.82	0.50	-6.831[b]	0.00000084	71.23%	HS
Angamard	2.16	0.59	1.57	2.00	1.00	0.84	0.50	-6.758[b]	0.00000140	72.84%	HS
Tandra	1.39	0.36	1.03	1.00	0.00	0.68	0.48	-7.077[b]	0.00000015	74.04%	HS
Shiro Gaurav	1.95	0.55	1.40	2.00	1.00	0.73	0.50	-6.937[b]	0.00000040	71.92%	HS
Akshi Gaurav	0.95	0.21	0.73	1.00	0.00	0.61	0.41	-5.657[b]	0.00015417	77.46%	HS

Since observations are on ordinal scale (gradations), so Wilcoxon Signed Rank Test is used to test efficacy in Group A. From above table, we can observe that P-Value for all parameters is less than 0.001. Hence, we can conclude that, effect observed in Group A is highly significant.

Here in results on subjective criteria in group A, it is observed that p value of *Jrimbha, Angamard, Tandra, Shiro Gaurav* and *Akshi Gaurav* is less than 0.0001, which show that the results are highly significant for all parameters. The percentage effect on *Jrimbha, Angamard, Tandra, Shiro Gaurav* and *Akshi Gaurav* is respectively 71.23%, 72.84%, 74.04%, 71.92% and 77.46%.

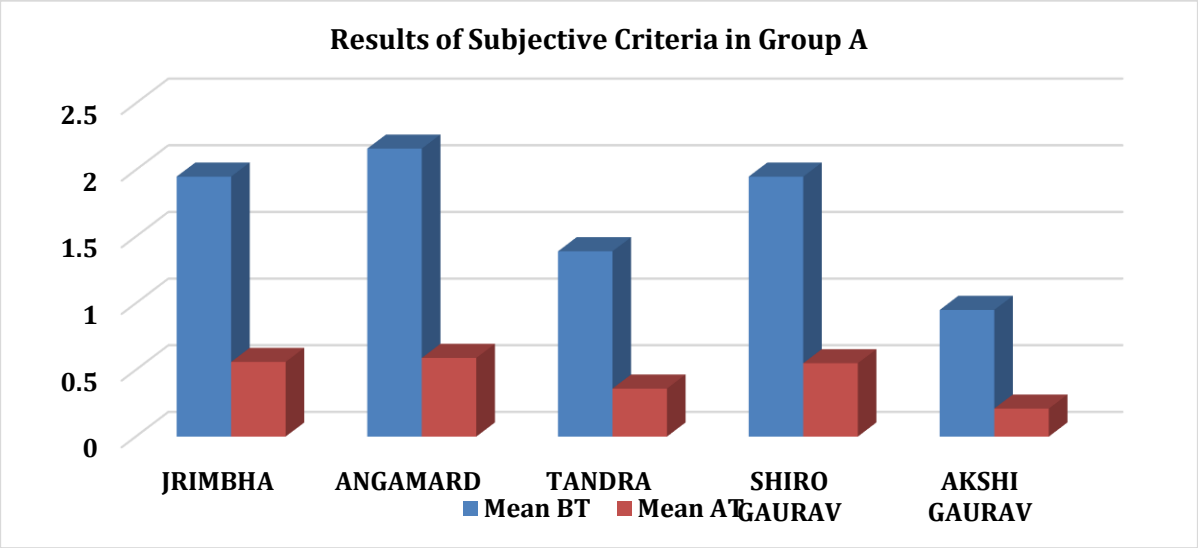


Table 9: Results of Subjective Criteria in Group B

Group B (Subjective)	Mean		Mean Diff.	Median		SD		Wilcoxon W	P-Value	% Effect	Result
	BT	AT		BT	AT	BT	AT				
Jrimbha	2.05	1.33	0.72	2.00	1.00	0.80	0.79	-6.247[b]	0.00004185	35.06%	HS
Angamard	2.12	1.09	1.03	2.00	1.00	0.84	0.89	-7.082[b]	0.00000014	48.43%	HS
Tandra	1.33	0.67	0.67	1.00	1.00	0.58	0.55	-6.998[b]	0.00000026	50.00%	HS
Shiro Gaurav	1.89	0.99	0.91	2.00	1.00	0.67	0.63	-6.897[b]	0.00000053	47.89%	HS
Akshi Gaurav	0.92	0.52	0.40	1.00	0.00	0.73	0.62	-5.477[b]	0.00043205	43.48%	HS

Here in results on subjective criteria in group B, it is observed that p value of *Jrimbha, Angamard, Tandra, Shiro Gaurav* and *Akshi Gaurav* is less than 0.0001, which show that the results are highly significant for all parameters. The percentage effect on *Jrimbha, Angamard, Tandra, Shiro Gaurav* and *Akshi Gaurav* is 35.06%, 48.43%, 50%, 47.89% and 43.48% respectively.

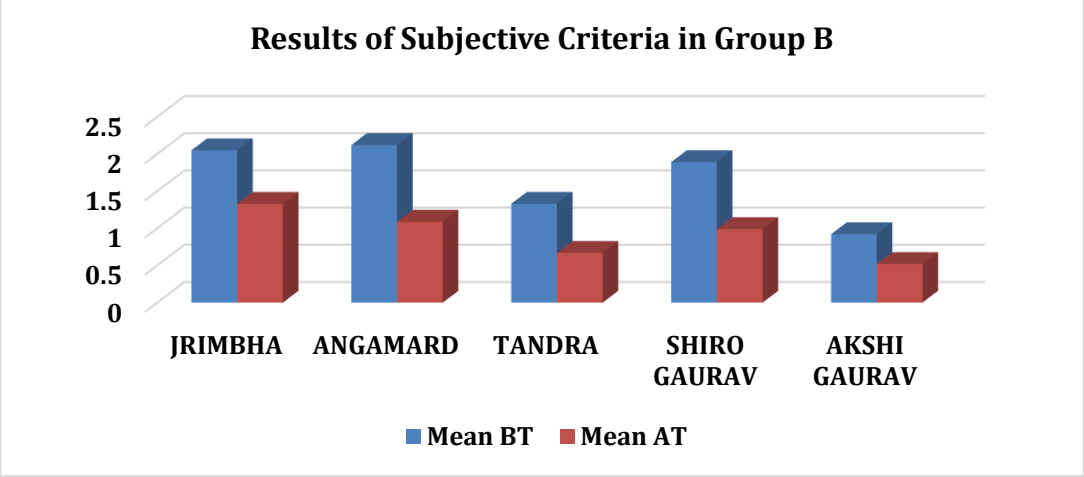


Table 10: Comparison between Group A and Group B On Subjective Parameter

Variable	Group	N	Mean Rank	Sum of Ranks	Mann-Whitney U	P-Value
Jrimbha	Group A	75	81.02	6076.50	2548.500	0.003
	Group B	75	69.98	5248.50		
	Total	150				
Angamard	Group A	75	77.55	5816.50	2808.500	0.010
	Group B	75	73.45	5508.50		
	Total	150				
Tandra	Group A	75	79.96	5997.00	2628.000	0.004
	Group B	75	71.04	5328.00		
	Total	150				
Shiro Gaurav	Group A	75	78.47	5885.00	2740.000	0.008
	Group B	75	72.53	5440.00		
	Total	150				
Akshi Gaurav	Group A	75	78.50	5887.50	2737.500	0.007
	Group B	75	72.50	5437.50		
	Total	150				

Mann Whitney U Test is carried out for comparison between Group A and Group B. From above table, we can observe that, P-Value for almost parameters is less than 0.05. Hence, we can conclude that, there is significant difference between Group A and Group B.

Further we can observe that, mean rank for Group A is greater than Group B. Hence, we can conclude that, effect observed in Group A is better than Group B.

Table 11: Results of Objective Criteria in Group A

Group A (Objective)	Mean		Mean Diff	Median		SD		Wilcoxon W	P-Value	% Effect	Result
	BT	AT		BT	AT	BT	AT				
Subjective sleep quality	1.72	0.51	1.21	2.00	1.00	0.75	0.50	-6.266[b]	0.00003702	70.54%	HS
Sleep latency	1.16	0.32	0.84	1.00	0.00	0.72	0.47	-5.196[b]	0.00020346	72.41%	HS
Sleep duration	1.28	0.28	1.00	1.00	0.00	0.45	0.45	-6.164[b]	0.00007074	78.13%	HS
Habitual sleep efficiency	1.27	0.28	0.99	1.00	0.00	0.47	0.45	-7.280[b]	0.00000003	77.89%	HS
Sleep	1.43	0.43	1.00	1.00	0.00	0.50	0.50	-7.000[b]	0.00000026	70.09%	HS

disturbances											
Uses of sleeping medications	0.21	0.05	0.16	0.00	0.00	0.41	0.23	-3.414[b]	0.00157299	75.00%	HS
Day time dysfunction	1.27	0.28	0.99	1.00	0.00	0.64	0.45	-7.421[b]	0.00000001	77.89%	HS
Global PSQI score	8.12	2.24	5.88	8.00	2.00	1.39	0.43	-7.539[b]	0.00000000	72.41%	HS

Since observations are on ordinal scale (gradations), we have used Wilcoxon signed Rank Test to test efficacy in Group A. From above table, we can observe that P-Value for all parameters is less than 0.001. Hence, we can conclude that, effect observed in Group A is highly significant.

The percentage effect of *Pratimarsh Nasya* in group A on objective parameter like subjective sleep quality, sleep latency, sleep duration, habitual sleep efficiency, sleep disturbances, uses of sleeping medications, day time dysfunction, global PSQI score is 70.54%, 72.41%, 78.13%, 77.89%, 70.09%, 75.00%, 77.89% and 72.41% respectively.

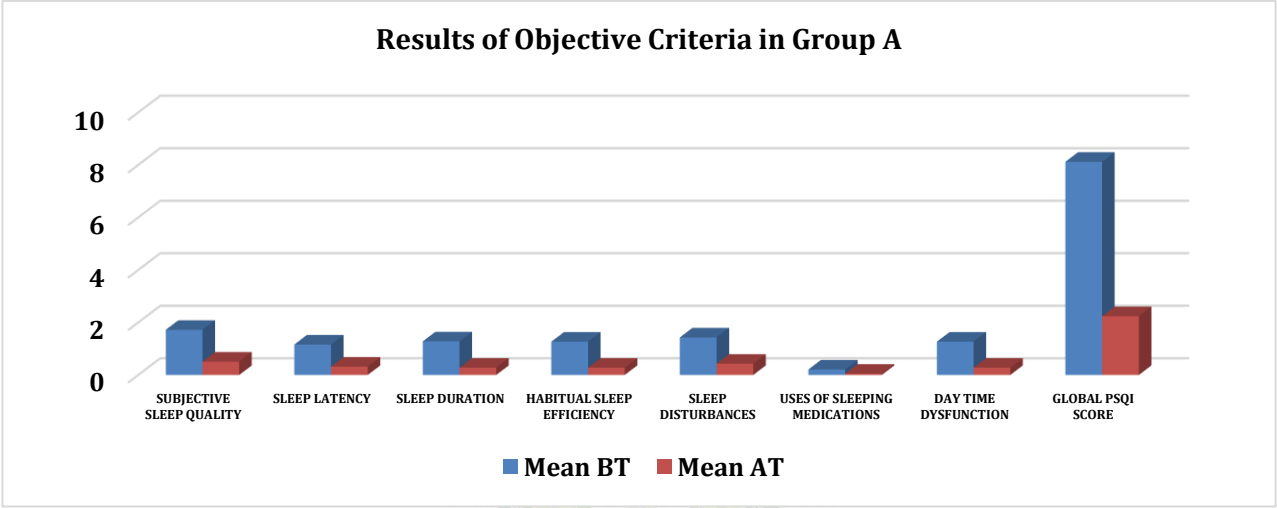


Table 12: Results of Objective Criteria in Group B

Group B (Objective)	Mean		Mean Diff	Median		SD		Wilcoxon W	P-Value	% Effect	Result
	BT	AT		BT	AT	BT	AT				
Subjective sleep quality	1.61	1.13	0.48	1.00	1.00	0.71	0.62	-3.873[b]	0.00010751	29.75%	HS
Sleep latency	1.19	0.77	0.41	1.00	1.00	0.59	0.42	-4.583[b]	0.00000459	34.83%	HS
Sleep duration	1.31	0.91	0.40	1.00	1.00	0.46	0.29	-3.464[b]	0.00053201	30.61%	HS
Habitual sleep efficiency	1.37	0.81	0.56	1.00	1.00	0.49	0.39	-4.359[b]	0.00001307	40.78%	HS
Sleep disturbances	1.44	0.92	0.52	1.00	1.00	0.50	0.27	-4.472[b]	0.00000774	36.11%	HS
Uses of sleeping medications	0.32	0.21	0.11	0.00	0.00	0.47	0.41	-4.000[b]	0.00016282	33.33%	HS
Day time dysfunction	1.24	0.80	0.44	1.00	1.00	0.79	0.40	-3.873[b]	0.00010751	35.48%	HS
Global PSQI Score	8.21	6.77	1.44	8.00	7.00	1.23	1.20	-6.233[b]	0.00004569	17.53%	HS

The percentage effect of sleep hygiene practices in group B on objective parameter like subjective sleep quality, sleep latency, sleep duration, habitual sleep efficiency, sleep disturbances, uses of sleeping medications, day time dysfunction, global PSQI score is 29.75%, 34.83%, 30.61%, 40.78%, 36.11%, 33.33%, 35.48% and 17.53% respectively.

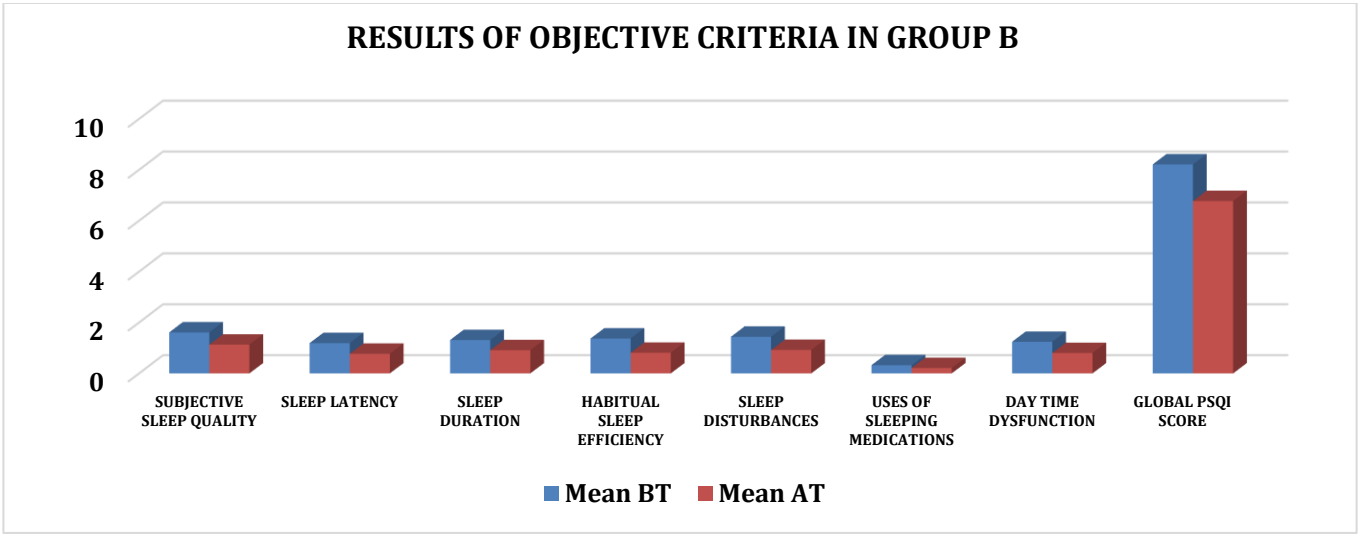


Table 13: Comparison Between Group A and Group B on Objective Parameter

Variable	Group	N	Mean Rank	Sum of Ranks	Mann-Whitney U	P-Value
Subjective Sleep Quality	Group A	75	88.70	6652.5	1822.500	0.000
	Group B	75	62.30	4672.5		
	Total	150				
Sleep Latency	Group A	75	80.50	6037.50	2587.500	0.003
	Group B	75	70.50	5287.50		
	Total	150				
Sleep Duration	Group A	75	88.50	6637.50	1837.500	0.000
	Group B	75	62.50	4687.50		
	Total	150				
Habitual Sleep Efficiency	Group A	75	92.50	6937.50	1537.500	0.000
	Group B	75	58.50	4387.50		
	Total	150				
Sleep Disturbances	Group A	75	90.00	6750.00	1725.000	0.000
	Group B	75	61.00	4575.00		
	Total	150				
Uses of Sleeping Medications	Group A	75	78.50	5887.50	2737.500	0.002
	Group B	75	72.50	5437.50		
	Total	150				
Day Time Dysfunction	Group A	75	96.10	7207.50	1267.500	0.000
	Group B	75	54.90	4117.50		
	Total	150				
Global PSQI score	Group A	75	107.97	8098.00	377.000	0.000
	Group B	75	43.03	3227.00		
	Total	150				

Mann Whitney U Test is carried out for comparison between Group A and Group B. From above table, we can observe that, P-Value for almost parameters is less than 0.05. Hence, we can conclude that, there is significant difference between Group A and Group B.

Further we can observe that, mean rank for Group A is greater than Group B. Hence, we can conclude that, effect observed in Group A is better than Group B.

Table 14: Results of Percentage Wise Effect of Subjective Criteria in Group A & B

Subjective	% Effect	
	Group A	Group B
Jrimbha	71.23%	35.06%
Angamard	72.84%	48.43%
Tandra	74.04%	50.00%
Shiro gaurav	71.92%	47.89%
Akshi gaurav	77.46%	43.48%
Average % effect	73.01%	42.44%

The percentage wise effect on subjective criteria i.e., *Jrimbha, Angamard, Tandra, Shiro Gaurav* and *Akshi Gaurav* is respectively 71.23%, 72.84%, 74.04%, 71.92% and 77.46% in Group A. The percentage effect on *Jrimbha, Angamard, Tandra, Shiro Gaurav* and *Akshi Gaurav* is 35.06%, 48.43%, 50%, 47.89% and 43.48% respectively in Group B. The average percentage effect was 73.01 and 42.44% respectively in group A and B.

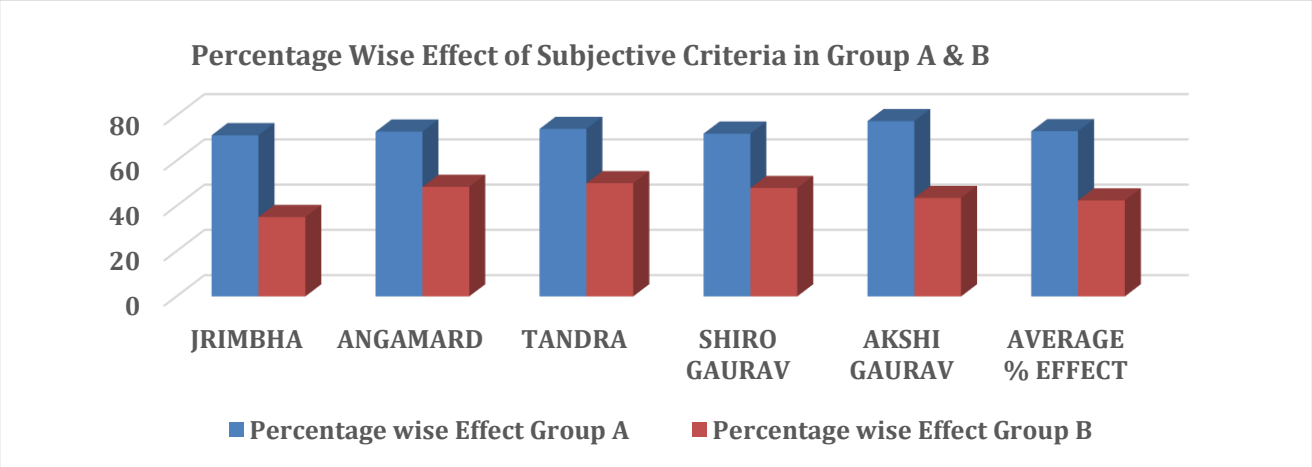


Table 15: Results of Percentage Wise Effect of Objective Criteria in Group A & B

Objective	% Effect	
	Group A	Group B
Subjective Sleep Quality	70.54%	29.75%
Sleep Latency	72.41%	34.83%
Sleep Duration	78.13%	30.61%
Habitual Sleep Efficiency	77.89%	40.78%
Sleep Disturbances	70.09%	36.11%
Uses of Sleeping Medications	75.00%	33.33%
Day Time Dysfunction	77.89%	35.48%
Global PSQI Score	72.41%	17.53%
Average % Effect	74.83%	32.67%

Percentage wise effect of *Pratimarsh Nasya* in group A on objective parameter like subjective sleep quality, sleep latency, sleep duration, habitual sleep efficiency, sleep disturbances, uses of sleeping medications, day time dysfunction, global PSQI score is 70.54%, 72.41%, 78.13%, 77.89%, 70.09%, 75.00%, 77.89% and 72.41% respectively.

The percentage effect of sleep hygiene practices in group b on objective parameter like subjective sleep quality, sleep latency, sleep duration, habitual sleep efficiency, sleep disturbances, uses of sleeping medications, day time dysfunction, global PSQI score is 29.75%, 34.83%, 30.61%, 40.78%, 36.11%, 33.33%, 35.48% and 17.53% respectively.

The average percentage effect was 74.83 and 32.67% respectively in group A and B.

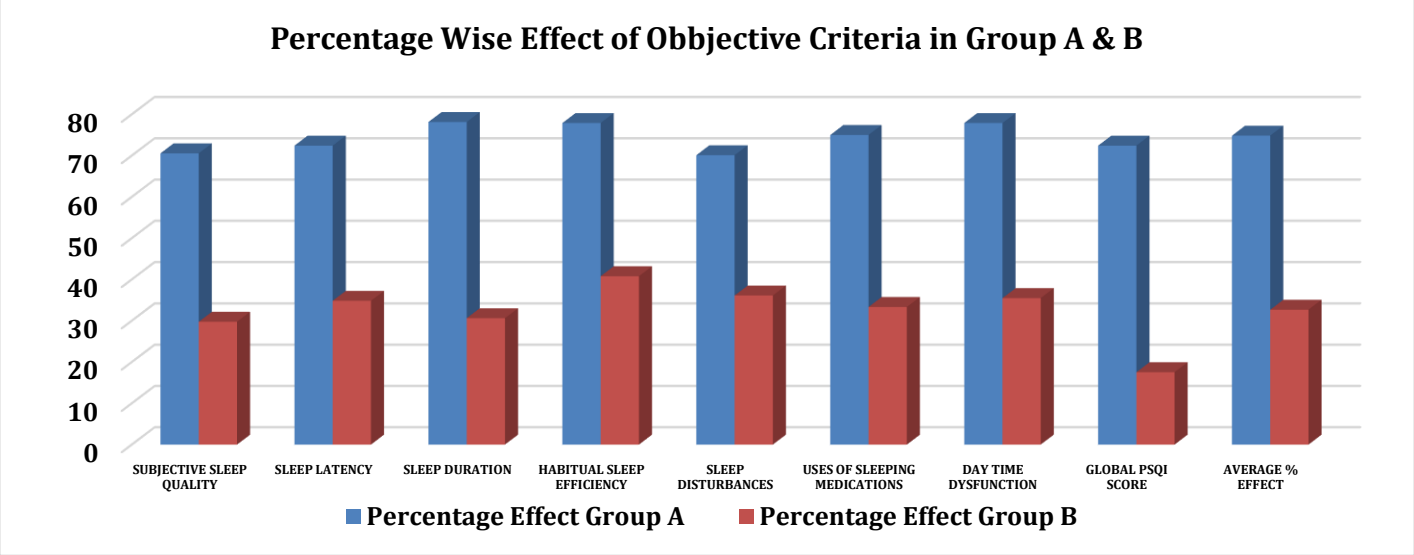
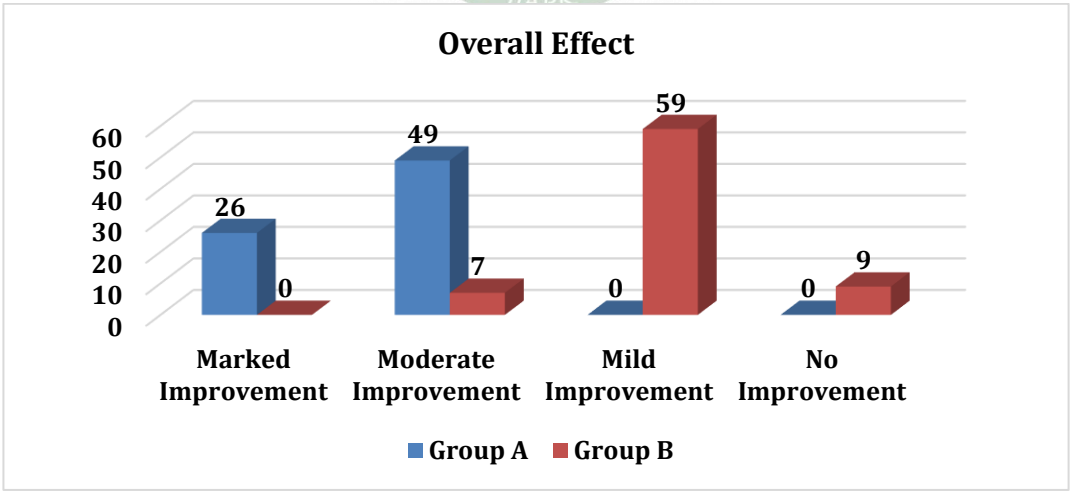


Table 16: Overall Effect in Group A & B

Overall Effect	Group A		Group B	
	N	%	N	%
Marked Improvement	26	34.67%	0	0.00%
Moderate Improvement	49	65.33%	7	9.33%
Mild Improvement	0	0.00%	59	78.67%
No Improvement	0	0.00%	9	12.00%
Total	75	100.00%	75	100.00%

In Group A, all participants showed either marked or moderate improvement. Total 34.67% participants showed marked improvement. 65.33% showed moderate improvement. No one shown the mild or no improvement.

While in group B, no participants showed marked improvement. Nearly 9.33% exhibited moderate improvement. 78.67% showed mild improvement. And 12% showed no improvement at all.



RESULTS

1. *Pratimarsh Nasya* (Group A) was found significantly effective in poor sleep quality.
2. Sleep hygiene (Group B) was found significantly effective in poor sleep quality.
3. On comparison, percentage wise effect of *Pratimarsh Nasya* (group A) was better than sleep Hygiene (group B) in poor sleep quality.

DISCUSSION

For the present research work *Murchhit Til tail* was given for *Pratimarsh Nasya*. *Til tail* is potent *Vaat shamak*, not increases the *Kapha. Tila Taila* (sesame oil) has the properties like penetrating deep into tissues and spreading throughout.

It is also the *Medhya, Balkrut, Agnivardhak, Keshya, Twachya, Guru* and *Ushn* in nature.[22] It helps

in pacifying the vitiated *Vata* and *Pitta* condition which is the key cause of poor sleep quality.

The *Pitta guna* is compensated by *Murchhna* process in which it is processed with various herbs like *Manjishtha*, *Amlaki, Lodhra, Mustaka* etc. which ultimately helps in balancing *Vata* and *Pitta samprapti* of individuals.

Why *Pratimarsha Nasya* is Chosen for the Study

As the lack of quality sound sleep is the sign of vitiated *Vata,* so *Sneh Chikitsa* is useful in such condition, the *Sneha* is used in the form of *Sneha Vicharana*[23] where *Nasya*[24] was chosen for providing *Sneha* to combat *Vriddha Vata* which is the leading cause of lack of quality sleep. So *Pratimarsh Nasya* was chosen for participants with *Murchhit Til Tail.*

In another group the sleep hygiene protocol was given to participants which includes life style modifications to relax the mind and controlling *Vata.*

As it is known that sleep -wake pattern is governed by brain in head, which is the seat of *Indriya-vahi srotas, Manah* is also function via *Indriya Vaha Srotas*. *Pran Vaha Srotas* also the channels of *Murdha*.[25]

And the *Nasa* is the gateway of that *Shirah* where all these faculties reside, the medicine of *Nasya* nourishes the *Indriya*, stabilize the *Manah*, and purify the *Pranvah Srotas*, ultimately helping in providing sound sleep. Nose is an organ of olfaction and plays its vital role in respiratory system. There is also another distinct feature of it being connected to the brain. Thus, Ayurveda scholars have mentioned '*Nasa Hi Shiraso Dvaram'* i.e., nose is gate way to head. [26]

Mode of Action of *Nasya*

Various research studies indicate that lipophilic compounds increase the absorption of the drugs. The nose is the nearest route to deliver the drug efficiently to brain. *Nasya* also nourishes brain cells by balancing *Tarpaka Kapha* as well as pacifying morbid *Dosha*.

Nose is connected directly to the ears through the eustachian tube, and it is also related to the eyes through the nasolacrimal duct and to the brain through the porous cribriform plate.

Acharya Vagbhata also described the drug administered through nostril reaches *Shringataka Marma* of head. [27] So *Nasya* nourishes the *Indriyas* and pacifies the *Vata* and *Pitta*.

Nasal airflow: *Nasya* treatments can improve nasal airflow and reduce congestion, which can help in ample amount of *Prana-vayu* intake which results in feeling refreshed and energized on wake up.

The oil drops when administered into the nostrils, rapidly travels through the cribriform plate into cerebrum by olfactory neurons and surrounding capillary bed. One division of olfactory systems have connection with limbic system, regulating the Emotions, which controls emotional, visceral somatic reactions, changes in behaviour, motivation, biological rhythms, respiratory, circulatory and endocrine changes. This nourishes the entire cerebral pathway, thus make HPA axis in equilibrium, which is the key component in producing stress. The *Snigdha* (unctuousness) *Guna* of *Murchhit Til tail* alleviates *Vata*, and its processing with other herbs also helps to subdues the *Pitta*.

Mode of Action of Sleep Hygiene Practices

Sleep hygiene practices are behavioural and environmental modifications aimed at improving sleep quality. Their mode of action addresses factors that disrupt sleep by optimizing physiological, psychological and environmental conditions for better rest through regulating the circadian rhythm, creating an optimal sleep environment, managing psychological triggers. [28]

CONCLUSION

So, it can be concluded that *Pratimarsha nasya* and sleep hygiene induces quality of sleep by improving getting to sleep and quality of sleep. *Pratimarsha nasya* and sleep hygiene makes getting to sleep easier and quicker. Sleep became calmer and wakeful periods are reduced, by use of *Pratimarsha nasya* and sleep hygiene. Sleep inertia i.e. "Awake following sleep" is easier and requires shorter time by use of *Pratimarsha nasya* and sleep hygiene. Individuals feel more alert and disruptions are reduced, thus *Pratimarsha nasya* and sleep hygiene improves behaviour following wakening. Overall, *Sukh-nidraprabodha* is more profound after administration of *Pratimarsha nasya* than sleep hygiene. Getting to sleep, quality of sleep, awake following sleep, behaviour following wakening all are positively changed. This present study might help prevent and cure many persistent diseases which are metabolic or life style disorder related with insufficient quality sleep- like obesity, asthma, heart disease, overweight, tachycardia, and hypertension.

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***Address for correspondence**
Dr. Parul Sharma
Assistant Professor
PG Dept of Panchkarma,
Rishikul Campus, Uttarakhand
Ayurved University, Haridwar.
Email: parul.ved@gmail.com

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